POWDER TECHNOLOGY VOLUME 105, NOS. 1–3, 1 NOVEMBER 1999

Contents

Abstracting Services
This journal is cited by the following Abstracting Services: Aluminium Industry Abstracts, Analytical Abstracts, Cambridge Scientific Abstracts, Chemical Abstracts, Chemical Engineering Abstracts, Compendex Plus, Current Contents, EMBASE/Excerpta Medica, MFIZ Karlsruhe, Fluid Abstracts, INSPEC, Metals Abstracts, Metal Powder Report, PASCAL/CNRS, Physikalische Berichte, World Surface Coatings Abstracts.

Special Issue: Ninth European Symposium on Comminution, Albi, France, 8–10 September 1998.

Editorial . . . 1

Plenary Conferences

From the product and process requirements to the milling facility . . . 2
F. Müller and R.F. Polke

Wet comminution in stirred media mills — research and its practical application . . . 14
A. Kwade

Topic 1 - Fundamentals

A grindability test to study the influence of material processing on impact behaviour . . . 21
O. Lecoq, P. Guigon and M.N. Pons

Lab-scale roller table mill for investigating the grinding behaviour of coal . . . 30
V. Werner, J. Żelkowski and K. Schönert

Impact crushing of concrete for liberation and recycling . . . 39
J. Tomas, M. Schreier, T. Gröger and S. Ehlers

Grindability enhancement by blast-induced microcracks . . . 52
K. Nielsen and T. Malvik

Breakage of macroporous alumina beads under compressive loading: simulation and experimental validation . . . 57
C. Couroyer, Z. Ning, M. Ghadiri, N. Brunard, F. Kolenda, D. Bortzmeyer and P. Laval

Effect of interface energy on the impact strength of agglomerates . . . 66
J. Subero, Z. Ning, M. Ghadiri and C. Thornton

Numerical simulations of agglomerate impact breakage . . . 74
C. Thornton, M.T. Ciomocos and M.J. Adams

Use of compression behaviour of legume seeds in view of impact grinding prediction . . . 83
J. Laskowski and G. Lysiak

(Continued inside)

The publisher encourages the submission of articles in electronic form thus saving time and avoiding rekeying errors. A leaflet describing our requirements is available from the publisher upon request

0032-5910(19991101)105:1-3;1-M

POWDER TECHNOLOGY VOLUME 105, NOS. 1–3, 1 NOVEMBER 1999

Contents

Abstracting Services
This journal is cited by the following Abstracting Services: Aluminium Industry Abstracts, Analytical Abstracts, Cambridge Scientific Abstracts, Chemical Abstracts, Chemical Engineering Abstracts, Compendex Plus, Current Contents, EMBASE/Excerpta Medica, MFIZ Karlsruhe, Fluid Abstracts, INSPEC, Metals Abstracts, Metal Powder Report, PASCAL/CNRS, Physikalische Berichte, World Surface Coatings Abstracts.

Special Issue: Ninth European Symposium on Comminution, Albi, France, 8–10 September 1998.

Editorial . . . 1

Plenary Conferences

From the product and process requirements to the milling facility . . . 2
F. Müller and R.F. Polke

Wet comminution in stirred media mills — research and its practical application . . . 14
A. Kwade

Topic 1 - Fundamentals

A grindability test to study the influence of material processing on impact behaviour . . . 21
O. Lecoq, P. Guigon and M.N. Pons

Lab-scale roller table mill for investigating the grinding behaviour of coal . . . 30
V. Werner, J. Żelkowski and K. Schönert

Impact crushing of concrete for liberation and recycling . . . 39
J. Tomas, M. Schreier, T. Gröger and S. Ehlers

Grindability enhancement by blast-induced microcracks . . . 52
K. Nielsen and T. Malvik

Breakage of macroporous alumina beads under compressive loading: simulation and experimental validation . . . 57
C. Couroyer, Z. Ning, M. Ghadiri, N. Brunard, F. Kolenda, D. Bortzmeyer and P. Laval

Effect of interface energy on the impact strength of agglomerates . . . 66
J. Subero, Z. Ning, M. Ghadiri and C. Thornton

Numerical simulations of agglomerate impact breakage . . . 74
C. Thornton, M.T. Ciomocos and M.J. Adams

Use of compression behaviour of legume seeds in view of impact grinding prediction . . . 83
J. Laskowski and G. Lysiak

(Continued inside)

The publisher encourages the submission of articles in electronic form thus saving time and avoiding rekeying errors. A leaflet describing our requirements is available from the publisher upon request

0032-5910(19991101)105:1-3;1-M

(continued from cover page 4)

Rheological properties of wheat endosperm with a view on grinding behaviour 89
Y. Haddad, F. Mabille, A. Mermet, J. Abecassis and J.C. Benet

Mechanical strength characterization of feed materials used in iron-making industry by Epstein theory 95
A. Delebarre, J. Leroy and P. Negro

An approach of the whiteness quantification of crushed and floated talc concentrate 106
L.O. Filippov, R. Joussemet, M. Irannajad, R. Houot and A. Thomas

Fracture kinetics of particle bed comminution — ramifications for fines production and mill optimization 113
O. Gutsche and D.W. Fuerstenau

Evaluation of the transition matrix for comminuting pea seeds in an impact mill using a linear neural network 119
D. Bertrand, D. Guibert, J.-P. Melcion and G. Duc

Two dimensions comminution of kaolinite clay particles 125
G. Baudet, V. Perrotel, A. Seron and M. Stellatelli

Breakage mechanisms and mill performance in ultrafine grinding 135
R. Hogg

Topic 2 - Mechanical Activation

Chemical surface modifications of sulphide minerals after comminution 141
Ph. de Donato, M. Kongolo, O. Barres, J. Yvon, F. Enderlé, E. Bouquet, M. Alnot and J.M. Cases

Synthesis of thermoelectric materials by mechanical alloying in planetary ball mills 149
J. Schilz, M. Riffel, K. Pixius and H.-J. Meyer

Mechanical activation conditions of the Fe_2O_3 and V_2O_3 mixture powders in order to obtain a nanometric vanadium spinel ferrite 155
V. Nivoix, F. Bernard, E. Gaffet, P. Perriat and B. Gillot

Mechanochemical synthesis of $CaTiO_3$ from a $CaO-TiO_2$ mixture and its HR-TEM observation 162
G. Mi, Y. Murakami, D. Shindo and F. Saito

Grinding and pozzolanic reactivity of quartz powders 167
J.C. Benezet and A. Benhassaine

Topic 3 - Classification

Pneumatic selection of fly ash: selection methods — influence of the operating parameters 172
L. Clerc, M.A. Minoux and A. Benhassaine

Process equation for centrifugal counter flow classification 179
D. Timmermann and K. Schönert

Industrial classification in a new impeller wheel classifier 186
J. Galk, W. Peukert and J. Krahnen

Topic 4 - Modelling and Simulation

Numerical model of crushing of grains inside two-dimensional granular materials 190
O. Tsoungui, D. Vallet and J.-C. Charmet

The effect of ball size on the energy efficiency of hybrid high-pressure roll mill/ball mill grinding 199
D.W. Fuerstenau, J.J. Lutch and A. De

Attrition as a process of comminution and separation 205
J. Stražišar and A. Sešelj

(Contents continued on preceeding page)

(Contents continued)

The modeling of dry grinding of quartz in tumbling media mills 210
K. Yildirim, H. Cho and L.G. Austin

Particle motion and energy distribution in tumbling ball mills 222
A. Misra and J. Cheung

Prediction of the product size distribution in associations of stirred bead mills 228
C. Varinot, H. Berthiaux and J. Dodds

Modeling of the particle breakage kinetics in the wet mills for the paper industry 237
J.C. Roux and T.L. Mayade

Model-based evaluation of grinding experiments 243
F. Müller, R. Polke and M. Schäfer

The discrete element method for fine grinding scale-up in Hicom mills 250
D.I. Hoyer

Simulation of jet milling 257
D. Eskin, S. Voropayev and O. Vasilkov

Modeling classifier networks by Markov chains 266
H. Berthiaux and J. Dodds

Topic 5 - Machine Design and Practical Experience

Comminution of metals in shredders with horizontally and vertically mounted rotors — microprocesses and parameters 274
J. Kirchner, G. Timmel and G. Schubert

Operational conditions of a screw-feeder-equipped high-pressure roller mill 282
U. Sander and K. Schönert

Steel scrap fragmentation by shredders 288
L. Aboussouan, Ph. Russo, M.N. Pons, D. Thomas, J.P. Birat and D. Leclerc

Intelligent Liberation and classification of electronic scrap 295
S. Zhang and E. Forssberg

Eccentric vibratory mills — theory and practice 302
E. Gock and K.-E. Kurrer

Charge motion model for vibration mills with high excitation 311
U. Bock and K. Schönert

Fine grinding of polymers in a vibrated bead mill 321
S. Molina-Boisseau and N. Le Bolay

Cryomilling of Al/AlN powders 328
C. Goujon, P. Goeuriot, M. Chedru, J. Vicens, J.L. Chermant, F. Bernard, J.C. Niepce, P. Verdier and Y. Laurent

Experimental investigation on fluidized bed jet grinding 337
S.M. Tasirin and D. Geldart

Development of a centrifugal mill — a chain of simulation, equipment design and model validation 342
T. Inoue, K. Okaya, S. Owada and T. Homma

Effect of the grinding behaviour of coal blends on coal utilisation for combustion 351
F. Rubiera, A. Arenillas, E. Fuente, N. Miles and J.J. Pis

The influence of suspension properties on ultra-fine grinding in stirred ball mills 357
C. Bernhardt, E. Reinsch and K. Husemann

(Contents continued on preceeding page)

(Contents continued)

Investigations on ultra-fine grinding of titanium dioxide in a stirred media mill 362
H. Bel Fadhel, C. Frances and A. Mamourian

Comminution of ceramics in stirred media mills and wear of grinding beads 374
M. Becker and J. Schwedes

Determination of the most important grinding mechanism in stirred media mills by calculating stress intensity and stress number 382
A. Kwade

Disintegration of microorganisms in a bead mill with a multi-disk impeller 389
A. Heim and M. Solecki

Wet grinding of gibbsite in a bead-mill 396
K. Belaroui, M.N. Pons, H. Vivier and M. Meijer

Theoretical and experimental investigation on particle and fluid motion in stirred media mills 406
J. Theuerkauf and J. Schwedes

Topic 6 - Comminution Circuits and Control

Optical fiber sensor for measuring high particle concentrations 413
L. Bergougnoux, J.-L. Firpo and J. Misguich-Ripault

An on-line pressure vessel rheometer for slurries 418
S.K. Kawatra, A.K. Bakshi and T.C. Eisele

Object components for comminution system softsensor design 424
J.A. Herbst and W.T. Pate

The selection of wet grinding chemical additives based on slurry rheology control 430
R.R. Klimpel

Change from pressure crushing in roller mills to impact crushing in production of mineral sand 436
K.L. Sandvik, S. Fagerli and T. Frost

Comparison of control strategies for a hematite processing plant 443
K. Tano, E. Öberg, P.O. Samskog, T. Monredon and A. Broussaud

Conference Calendar 451

Author Index of Volume 105 453

Subject Index of Volume 105 454

CONTENTS Direct

This journal is part of **ContentsDirect,** the ***free*** alerting service which sends tables of contents by e-mail for Elsevier Science books and journals. You can register for **ContentsDirect** online at: **www.elsevier.nl / locate / contentsdirect**